

Name: _____

Date: _____

s17 Geometric Series Exam (Practice v5)

Question 1

Consider the partial geometric series represented below with first term $a = 847$, common ratio $r = \left(\frac{65}{77}\right)^{1/10}$, and $n = 10$ terms.

$$S = 847 + 832.77 + 818.78 + 805.03 + 791.5 + 778.21 + 765.13 + 752.28 + 739.64 + 727.22$$

We can multiply both sides by r .

$$rS = 832.77 + 818.78 + 805.03 + 791.5 + 778.21 + 765.13 + 752.28 + 739.64 + 727.22 + 715$$

What is the value of $S - rS$?

Question 2

Consider the geometric series shown below, using ellipsis notation to indicate a continuation of the pattern without writing every term.

$$S = 6 + 6(4) + 6(4)^2 + 6(4)^3 + \cdots + 6(4)^{60} + 6(4)^{61} + 6(4)^{62} + 6(4)^{63}$$

Identify the initial term, the common ratio, and the number of terms.

Question 3

Write a proof for the partial geometric series formula.

- a. Define the variables.
- b. Write the sum using variables and ellipsis notation. You can implicitly assume the number of terms is more than the number of terms you choose to write.
- c. Using annotated algebraic manipulation, produce the partial geometric series formula.